

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (previously presented) A method for separating a sample into components by two-dimensional electrophoresis, said method comprising:
 - a. providing a first electrophoretic separation medium comprising an elongate strip, and a second electrophoretic separation medium, said media being spaced apart and carried on a single support means;
 - b. with the support means oriented in a generally vertical plane and the first electrophoretic separation medium oriented in a horizontal plane spaced above or below the second electrophoretic separation medium by a gap, carrying out a first dimension separation of a sample mixture in the first electrophoretic separation medium, while the first and second media are separated by a non-electrically conducting liquid which is substantially immiscible with, and non-extractive of, water;
 - c. after the first dimension separation of step b has been carried out, tilting the support means so that the first electrophoretic separation medium is at an angle to the horizontal and flushing the liquid out from the gap between the first electrophoretic separation medium and the second electrophoretic separation medium; and
 - d. flowing a liquid buffer containing bridging material into the gap;
 - e. applying an electric field to transfer sample molecules from the first electrophoretic separation medium to the second electrophoretic separation medium .

2. (original) A method as claimed in claim 1 wherein the first electrophoretic separation medium is at least partly enclosed by a removable metal foil cover which allows the medium to be rehydrated, using a liquid containing the sample to be separated, while the support means is in the vertical orientation.
3. (original) A method as claimed in claims 1 or 2 wherein the non-electrically conducting liquid is paraffin oil.
4. (previously presented) A method as claimed in claim 1 wherein the first electrophoretic separation medium comprises an IPG strip.
5. (previously presented) A method as claimed in claim 1 wherein the second electrophoretic separation medium comprises a gel slab.
6. (previously presented) A method as claimed in claim 1 wherein the support means comprises a generally planar support.
7. (previously presented) A method as claimed in claim 1 wherein the liquid buffer containing bridging material comprises agarose gel containing a buffer.
8. (currently amended) ~~An apparatus~~ Apparatus for carrying out a ~~separating a sample into components by two-dimensional electrophoretic separation of a sample, electrophoresis, said~~

apparatus comprising:

a first electrophoretic separation medium comprising an elongate strip;

a second electrophoretic separation medium, both said media being spaced apart and carried on a single generally planar support means; and

a ~~gas-impermeable~~ cover means comprising ~~a thin film which~~ a metal foil coated with a conductive plastic layer wherein the cover means seals to in conjunction with the planar support means and, in conjunction with the planar support means, encloses the elongate strip.

9. (currently amended) An apparatus as claimed in claim 8 wherein the ~~thin film~~ metal foil comprising the cover means is electrically conductive.

10. (cancelled)

11. (original) Apparatus as claimed in claim 8 wherein the media are spaced apart by a gap of from 1 to 4mm.

12. (original) Apparatus as claimed in claim 8 or 9 wherein the solid support forms part of a cassette having a front wall, a rear wall and opposed side walls and wherein ends of the strip are separated from the adjacent side walls of the cassette by a gap of about 5mm.

13. (previously presented) Apparatus as claimed in claim 12 wherein the cassette defines electrode bridge portions adjacent the ends of the strip.

14. (currently amended) A two dimensional electrophoresis gel cassette comprising:
- a cassette shell having a planar support surface;
 - a first electrophoretic separation medium comprising an elongate strip supported on the planar support surface;
 - a second electrophoretic separation medium comprising a slab supported on the planar surface; and
 - a removable~~[[,]] gas-impermeable thin film~~ metal foil cover coated with a conductive plastic layer, wherein the cover seals to the planar support surface of the cassette shell and, in conjunction with the planar support surface of the cassette shell, encloses the first medium; the cassette shell defining a fluid retaining space between the first and second mediums.
15. (currently amended) The cassette according to claim 14 wherein the first medium is in a dehydrated state, and wherein the removable ~~thin film~~ metal foil cover is openable to form an open fluid retaining space around the first medium for rehydrating the first medium.
16. (currently amended) The cassette according to claim 14 wherein the removable ~~thin film~~ metal foil cover opens to form a fluid retaining space when the planar support is in a generally vertical orientation.
17. (currently amended)) The cassette according to claim 14 wherein the removable ~~thin film~~ metal foil is electrically conductive.
18. (cancelled)

19. (cancelled)

20. (currently amended) A two dimensional electrophoresis gel cassette comprising:

a cassette shell having a planar support surface;

a first electrophoretic separation medium comprising an elongate strip supported on the planar support surface;

a second electrophoretic separation medium comprising a slab supported on the planar surface; and

a removable, ~~gas impermeable thin film~~ metal foil cover coated with a conductive plastic layer, wherein the cover seals to the planar support surface of the cassette shell and encloses the first medium ~~which~~, in conjunction with the planar support surface of the cassette shell[[,]] ~~encloses the first medium~~;

the cassette shell defining a fluid retaining space between the first medium and the second medium wherein upon removal of the cover the fluid retaining space can retain a non-electrically conducting liquid whereby the first medium can be used to conduct an electrophoretic separation.

21. (currently amended) A two dimensional electrophoresis gel cassette comprising:

a cassette shell having a planar support surface;

a first electrophoretic separation medium comprising an elongate strip supported on the planar support surface;

a second electrophoretic separation medium comprising a slab supported on the planar surface; and

a removable, ~~gas impermeable thin film~~ metal foil cover coated with a conductive plastic layer, wherein the cover seals to the planar surface and, which, in conjunction with the planar support surface of the cassette shell, encloses the first medium;

the cassette shell defining a fluid retaining space between the first and second mediums

wherein after the cover has been removed and the first medium used for a first electrophoretic separation, a bridging material can be disposed in the fluid retaining space whereby the second medium can be used for electrophoretic separation of the materials electrophoretically separated in the first medium.

22. (currently amended) A method of separating a sample into components by two dimensional electrophoresis using a cassette comprising a shell having a planar support surface, a first electrophoretic separation medium comprising an elongate strip supported on the planar support surface, a second electrophoretic separation medium comprising a slab supported on the planar surface, and a ~~gas impermeable removable thin film~~ metal foil cover coated with a conductive plastic layer, wherein the cover seals to which, in conjunction with the planar support surface of the cassette shell, and the cover, in conjunction with the planar surface, encloses the first medium, the method comprising:

removing the cover;

introducing the sample into the first medium;

introducing a non-electrically conducting fluid between the first and second mediums;

conducting a first electrophoretic separation using the first medium;

replacing the non-electrically conducting fluid with a bridging material; and

conducting a second electrophoretic separation of the material separated in the first electrophoretic separation.

23. (cancelled)